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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/572,518	03/15/2007	Olaf Pichler	4015-5818	4849
24112	7590	09/21/2009	EXAMINER	
COATS & BENNETT, PLLC 1400 Crescent Green, Suite 300 Cary, NC 27518			CURS, NATHAN M	
ART UNIT		PAPER NUMBER		
2613				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/572,518	PICHLER ET AL.	
	Examiner	Art Unit	
	NATHAN M. CURS	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 15 March 2007.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-25 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-25 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 15 March 2007 is/are: a) accepted or b) objected to by the Examiner.

 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 6/06.

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) Notice of Informal Patent Application

6) Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A “Sequence Listing” is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required “Sequence Listing” is not submitted as an electronic document on compact disc).

Claim Objections

4. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 13-25 should be renumbered 12-24.

5. Claim 23 is objected to because of the following informalities: the claim should end with a period. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. Claims 15 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15 recites the limitation "the number of receivers" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 19 recites the limitation "the number of transmitters" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 13-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graves et al. ("Graves") (US Patent Application Publication No. 2002/0064336).

Regarding claim 13, Graves discloses a node for an optical communication network (fig. 3 and paragraphs 0035-0036) comprising: at least one switching unit (fig. 3 where elements 12a-12m together read on a switching unit); a plurality of optical interfaces to connect to a Wavelength Division Multiplex (WDM) transmission line (fig. 3 elements 16 and 18), comprising: a demultiplexer to disassemble an incoming multiplex

signal arriving from the WDM transmission line into a plurality of input channels, each input channel being supplied to an input port of the switching unit (fig. 3 element 16); and a multiplexer to assemble a plurality of output channels from a corresponding plurality of output ports of the switching unit into an outgoing multiplex signal (fig. 3 element 18); and at least one receiver to extract an information signal received from the optical communication network (fig. 3 element 36 and paragraph 0034, where there are inherent receivers for each drop signal); and an input branching mechanism disposed on the path of the input channels between each optical interface and the switching unit to selectively supply an input channel to the switching unit and to the receiver (fig. 3 element 56 and paragraphs 0035-0036, where element 56 selectively supplies each input channels to the switching unit 12a-12m when it's working, or to the drop channels by way of additional switching unit 12m+1 when switching unit 12a-12m has a failure). Graves does not specifically disclose that *each* optical interface unit of the fig. 3 embodiment comprises a demultiplexer and a multiplexer. However, Graves discloses that the unidirectional nature of the disclosure is only to simplify the drawings and that bidirectional traffic is supported by the switching planes with suitable input and output components (paragraph 0066). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify elements 16 and 18 of Graves fig. 3 to include both multiplexers and demultiplexers, and to modify elements 56 and 58 to support bidirectional traffic to and from the switching units and the add and drop channels, to support the bidirectional traffic suggested by Graves.

Regarding claim 14, Graves discloses the node of claim 13 wherein the demultiplexer includes a plurality of output ports (fig. 3 element 16), and wherein the input branching mechanism comprises a switch associated with each demultiplexer output port to selectively connect the demultiplexer output port to one of the input ports of the switching unit or to the receiver (fig. 4 and paragraphs 0037-0039, applicable for element 56).

Regarding claim 15, Graves discloses the node of claim 14 but does not specifically disclose that the number of receivers corresponds to the number of input channels, and wherein the input branching mechanism connects each receiver to an associated demultiplexer output port. However, Graves discloses plural receivers (fig. 3 element 36, where R represents plural drop channels, each having an inherent receiver). It would have been obvious to one of ordinary skill in the art at the time of the invention to set R to a value at least the same as the number of demultiplexed channels, so that each demultiplexed channel has the option of being switched through or dropped, including protection switched through additional switching unit 12m+1, for maximizing traffic routing flexibility.

Regarding claim 16, Graves discloses the node of claim 13 but does not disclose that each receiver comprises an optical-electrical converter. However, the Office takes official notice that optical-electrical converter type receivers are well known for WDM drop channel receivers. It would have been obvious to one of ordinary skill in the art at the time of the invention to use optical-electrical converter type receivers for the drop

channels of Graves, in order to convert the optical signals into electrical signals for data recovery or other drop-client processing.

Regarding claim 17, Graves discloses a node for an optical communication network (fig. 3 and paragraphs 0035-0036) comprising: at least one switching unit (fig. 3 where elements 12a-12m together read on a switching unit); a plurality of optical interfaces to connect to a Wavelength Division Multiplex (WDM) transmission line (fig. 3 elements 16 and 18), comprising: a demultiplexer to disassemble a multiplex signal arriving from the WDM transmission line into a plurality of input channels, each input channel being supplied to an input port of the switching unit (fig. 3 element 16); and a multiplexer to assemble a plurality of output channels from a corresponding plurality of output ports of the switching unit into an outgoing multiplex signal (fig. 3 element 18); and at least one transmitter to supply an information signal to the optical communication network (fig. 3 element 34 and paragraph 0034, where there are inherent transmitter for each add signal); and an output branching mechanism disposed on the path of the output channels between each optical interface and the switching unit to selectively supply an output channel to the interface from the switching unit and from the transmitter (fig. 3 element 58 and paragraphs 0035-0036, where element 58 selectively outputs each channels from the switching unit 12a-12m when it's working, or from the add channels by way of additional switching unit 12m+1 when switching unit 12a-12m has a failure). Graves does not specifically disclose that *each* optical interface unit of the fig. 3 embodiment comprises a demultiplexer and a multiplexer. However, Graves discloses that the unidirectional nature of the disclosure is only to simplify the drawings

and that bidirectional traffic is supported by the switching planes with suitable input and output components (paragraph 0066). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify elements 16 and 18 of Graves fig. 3 to include both multiplexers and demultiplexers, and to modify elements 56 and 58 to support bidirectional traffic to and from the switching units and the add and drop channels, to support the bidirectional traffic suggested by Graves.

Regarding claim 18, Graves discloses the node of claim 17 wherein the multiplexer includes a plurality of input ports (fig. 3 element 18), and wherein the output branching mechanism comprises a switch associated with each multiplexer input port to selectively connect the multiplexer input port to one of the output ports of the switching unit or to the transmitter (fig. 4 and paragraphs 0037-0039, applicable for element 58).

Regarding claim 19, Graves discloses the node of claim 18 but does not specifically disclose that the number of transmitters corresponds to the number of output channels, and wherein the output branching mechanism connects each transmitter to an associated multiplexer input port. However, Graves discloses plural transmitters (fig. 3 element 34, where R represents plural add channels, each having an inherent transmitter). It would have been obvious to one of ordinary skill in the art at the time of the invention to set R to a value at least the same as the number of multiplexed channels, so that each multiplexed channel has the option of being switched through or added, including protection switched through additional switching unit 12m+1, for maximizing traffic routing flexibility.

Regarding claim 20, Graves discloses the node of claim 17 wherein the transmitter connects to one or more output channels (fig. 3 element 34 connecting through to the output channels multiplexed by element 18) and is adapted to supply an information signal having a selectable wavelength to one of the output channels (fig. 3 element 14 and paragraphs 0033-0034, which converts the wavelengths of the add channels).

Regarding claim 21, Graves discloses the node of claim 17 but does not specifically disclose that each transmitter comprises an electrical-optical converter. However, the Office takes official notice that electrical-optical converter type transmitters are well known for WDM add channel transmitters. It would have been obvious to one of ordinary skill in the art at the time of the invention to use electrical-optical converter type transmitters for the add channels of Graves, in order to convert add-client signals to optical signals compatible with the WDM transmission system.

9. Claims 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graves (US Patent Application Publication No. 2002/0064336) in view of Strasser et al. (“Strasser”) (US Patent No. 2009/0142060).

Regarding claim 22, Graves discloses a node for an optical communication network (fig. 3 and paragraphs 0035-0036) comprising: at least one switching unit (fig. 3 where elements 12a-12m together read on a switching unit); a plurality of optical interfaces to connect to a Wavelength Division Multiplex (WDM) transmission line (fig. 3 elements 16 and 18), comprising: a demultiplexer to disassemble a multiplex signal

arriving from the WDM transmission line into a plurality of input channels, each input channel being supplied to an input port of the switching unit (fig. 3 element 16); and a multiplexer to assemble a plurality of output channels from a corresponding plurality of output ports of the switching unit into an outgoing multiplex signal (fig. 3 element 18); and a transmitter to supply an information signal to the optical communication network (fig. 3 element 34 and paragraph 0034, where there are inherent transmitter for each add signal) and a receiver to extract an information signal received from the optical communication network (fig. 3 element 36 and paragraph 0034, where there are inherent receivers for each drop signal); and a branching mechanism disposed between each optical interface and the switching unit to selectively supply an output channel to the interface from the switching unit and from the transmitter and to selectively supply an input channel to the switching unit and to the receiver (fig. 3 elements 56 and 58 and paragraphs 0035-0036, where element 56 selectively supplies each input channels to the switching unit 12a-12m when it's working, or to the drop channels by way of additional switching unit 12m+1 when switching unit 12a-12m has a failure, and where element 58 selectively outputs each channels from the switching unit 12a-12m when it's working, or from the add channels by way of additional switching unit 12m+1 when switching unit 12a-12m has a failure).

Graves does not disclose a transponder comprising both the transmitter and the receiver. Strasser discloses a transponder for an OADM, used between the OADM and the clients, for transmitting optical add signals and receiving optical drop signals and inherent O/E and E/O converters for converting to and from electrical client signals (fig.

2 elements 230 and paragraph 0005). It would have been obvious to one of ordinary skill in the art at the time of the invention to use transponders like those of Strasser for pairs of add/drop channels of Graves, to provide a single client access point for each add/drop channel pair, as disclosed by Strasser.

Also, the combination as described above does not disclose that *each* optical interface unit of the fig. 3 embodiment comprises a demultiplexer and a multiplexer, and does not disclose that the transmitter and receiver of each transponder are connected to the same branching mechanism. However, Graves discloses that the unidirectional nature of the disclosure is only to simplify the drawings and that bidirectional traffic is supported by the switching planes with suitable input and output components (paragraph 0066). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify elements 16 and 18 of Graves fig. 3 to include both multiplexers and demultiplexers, and to modify elements 56 and 58 to support bidirectional traffic to and from the switching units and the add and drop channels, to support the bidirectional traffic suggested by Graves.

Regarding claim 23, the combination of Graves and Strasser discloses the node of claim 22 further wherein each branching mechanism is further operative to supply to the switching unit an input channel from the optical interface or from one of the transponders, and to supply an output channel from the switching unit to an output channel of the optical interface or to one of the transponders (Graves: fig. 3 elements 56 and 58, as modified in the combination for bidirectional transmission).

Regarding claim 24, the combination of Graves and Strasser discloses the node of claim 22 wherein each receiver comprises an optical-electrical converter, and each transmitter comprises an electrical-optical converter (Strasser: fig. 2 elements 230 and paragraph 0005, as applicable in the combination).

Regarding claim 25, the combination of Graves and Strasser discloses the node of claim 22 wherein the transponder includes a signal regenerator circuit (Strasser: fig. 2 elements 230 and paragraph 0005, as applicable in the combination, where the conversion to and from electrical, for the client signals, is a type of signal regeneration).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- US Patent No. 6829436 – discloses an optical cross-connect with TX and RX devices between the demux, switch and mux.
- US Patent No. 6909848 – discloses an optical cross-connect with transponders between the demux, switch and mux.
- US Patent No. 7106967 – discloses an optical switch between input and output interfaces.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATHAN M. CURS whose telephone number is (571)272-3028. The examiner can normally be reached on 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/NATHAN M CURS/

Primary Examiner, Art Unit 2613